

# PATENT SPECIFICATION

DRAWINGS ATTACHED

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## COMPLETE SPECIFICATION

### Improvements in Exercising Apparatus

I, WILLIAM HUNTER, a British subject, of 21 Chester Street, Edinburgh 3, Great Britain, do hereby declare the invention, for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:

This invention relates to exercising apparatus of the kind incorporating a load which is raised and lowered by the user during use of the apparatus. Apparatus of this kind will hereinafter and in the claims be referred to as apparatus of the kind stated and is used especially in physiotherapy. It is an object of the present invention to provide exercising apparatus of the kind stated which may be easily and quickly adjusted to suit the height of a user.

According to the present invention, there is provided exercising apparatus of the kind stated comprising a frame carrying guide members for passage of a rope, cable, or like flexible elongate member (hereinafter and in the claims referred to simply as "a rope") in a vertical or substantially vertical loop, two of said guide members being horizontally or substantially horizontally spaced and the rope extending therebetween through a fall where it is entrained about a floating pulley adapted to be loaded adjustably, and two of said guide members being vertically or substantially vertically spaced and the frame having mounted therebetween vertically-adjustable anchorage means to which is secured one end of the rope and through which passes from the opposite direction the other or user-graspable end of the rope which is then locked to a stop abuttable on the anchorage means to limit the depth of the fall.

Preferably said guides are pulleys.

Preferably, also, said anchorage means includes a collar slidable on a vertical rod

of said frame and provided with means for clamping same to said rod in any adjusted position.

The stop block is preferably slidable along said rope and is lockable thereon in any adjusted position.

The anchorage means may include a bracket secured to said collar and carrying for swivellable movement relative thereto a guide for the through-passing length of rope.

It will be manifest that vertical adjustment of the anchorage means does not result in any change in the depth of the fall, and that any adjustment of the stop block changes the height through which a load can be raised and lowered.

The frame may be secured to the floor and/or a wall of a room, or may be mounted on a trolley so as to be readily transportable, for example in a hospital. A handle is preferably secured to the free end of the rope to facilitate gripping by a user of the apparatus.

An embodiment of the invention will now be described, by way of example, with reference to the accompanying drawings, in which:—

Fig. 1 is a perspective view from above and to one side and the front of exercising apparatus of the kind stated according to the invention;

Fig. 2 is a side sectional elevation of the apparatus, a part being broken away for the purposes of clarity;

Fig. 3 is an elevation, to a larger scale, illustrating a detail of the apparatus; and

Figs. 4, 5 and 6, illustrate, to a still larger scale, the manner in which the stop block is locked to the rope.

Referring to the drawings, exercising apparatus of the kind stated according to the invention comprises a frame consisting

of a base plate 10, a top plate 11, and three uprights 12, 13 and 14, in the form of rods, interconnecting the two plates 10 and 11 in vertical spaced and parallel relationship. Four pulleys 15, 16, 17 and 18 are mounted with their axes cutting and perpendicular to the apices of a quadrilateral figure. The pulleys 15 and 16 are mounted, respectively, below and above the top plate 11, and the pulleys 17 and 18 are both mounted below the base plate 10. As can be seen in Figs. 1 and 2, the base plate 10 is secured in spaced parallel relation above a bottom plate 19 by means of studs 20 at the four corners of the base plate. The bottom plate has openings 21 to enable same to be fixed to a trolley, or to a floor 22 as shown in Fig. 2, and the pulleys 17 and 18 are in the space between the base and bottom plates.

The rod 14 has slidably mounted thereon a collar 23 which forms part of an anchorage means which also includes a bracket 24 secured to the collar 23 and supporting a carrier 25 for swivelling movement about a vertical axis. A pulley 26 is mounted in the carrier 25, for rotation about a horizontal axis. A knob 27 is provided for locking the collar 23 in adjusted position on the rod 14.

A rope 28 is anchored at one of its ends at 29 to the bracket 24, as best shown in Fig. 3. The rope 28 extends downwards from its anchorage point to the pulley 18, passing through an opening 30 provided therefor in the base plate 10, thence about the pulley 17 and up through a second opening 31 in the base plate to the pulley 15. Between the pulleys 15 and 16, the rope 28 includes a fall 32 at the bottom of which it extends about a floating pulley 33. The rope passes through an opening 34 therefor in the top plate 11 on its way to the pulley 16 from the pulley 33, and then extends down to the pulley 26, terminating in a handle 35.

Between the pulley 26 and the handle 35, the rope 28 passes through a bore 37 in a tubular stop block 36, for example of wood or Tufnol (Registered Trade Mark), which can be locked to the rope in any desired position and will abut against the carrier 25 to limit the depth of the fall 32. The stop block 36 is best seen in Figs. 4 to 6, and a portion is cut out substantially centrally between the ends of the block to provide a recess 38 opening into the bore 37 to such an extent as to permit the through-passing length of the rope 28 to be gripped and pulled out of the recess to form a slack portion as best seen in Fig. 5. The carrier-remote end of the block 36 is formed with a groove 39 which overlaps but does not coincide with the bore 37, and the slack portion of the rope is engaged in the groove to lock the block on the rope, as shown

in Fig. 6. The block is fitted with a resilient cap or end piece 40, for example of rubber, at its carrier-adjacent end and this absorbs any shock which may be imparted to the block on its abutment against the carrier 25.

The floating pulley 33 can be loaded to an adjustable degree and has suspended therefrom a carrier 41 which has forked ends 42 loosely engaging the uprights 12 and 13, which thus guide the carrier and prevent rotation of same. The carrier 41 may be weighted to any desired degree.

It will be manifest that the weighted carrier will keep the fall 32 at the maximum depth determined by abutment of the block against the carrier 25. The block can be positionally adjusted along the rope 28 and this has the effect of adjusting the maximum depth of the fall 32. Moreover, the collar 23, can be unlocked and slid along the rod 14 and re-locked in any desired position. This has the effect of moving the rope about the pulleys 15, 16, 17, 18 and 33, but does not change the aforesaid maximum depth of the fall 32. Thus this adjustment is one which caters for differences in height of users of the apparatus.

The apparatus illustrated in the drawings is a fixture, the top plate 11 having an upturned end flange 43 by means of which it is secured to a strap 44 mounted on a wall 45. The apparatus could, however, be mounted on a trolley so that it could be moved from place to place quite easily. The frame could be otherwise arranged, for example by placing the three rods 12, 13 and 14 in line, and either the handle 35 or the block 36 omitted so that the remaining one of the two acts as the stop limiting the depth of the fall 32.

#### WHAT I CLAIM IS:—

1. Exercising apparatus of the kind stated comprising a frame carrying guide members for passage of a rope in a vertical or substantially vertical loop, two of said guide members being horizontally or substantially horizontally spaced and the rope extending therebetween through a fall where it is entrained about a floating pulley adapted to be loaded adjustably, and two of said guide members being vertically or substantially vertically spaced and the frame having mounted therebetween vertically-adjustable anchorage means to which is secured one end of the rope and through which passes from the opposite direction the other or user-graspable end of the rope which is then locked to a stop abutable on the anchorage means to limit the depth of the fall.

2. Exercising apparatus according to claim 1, in which said guide members are pulleys.

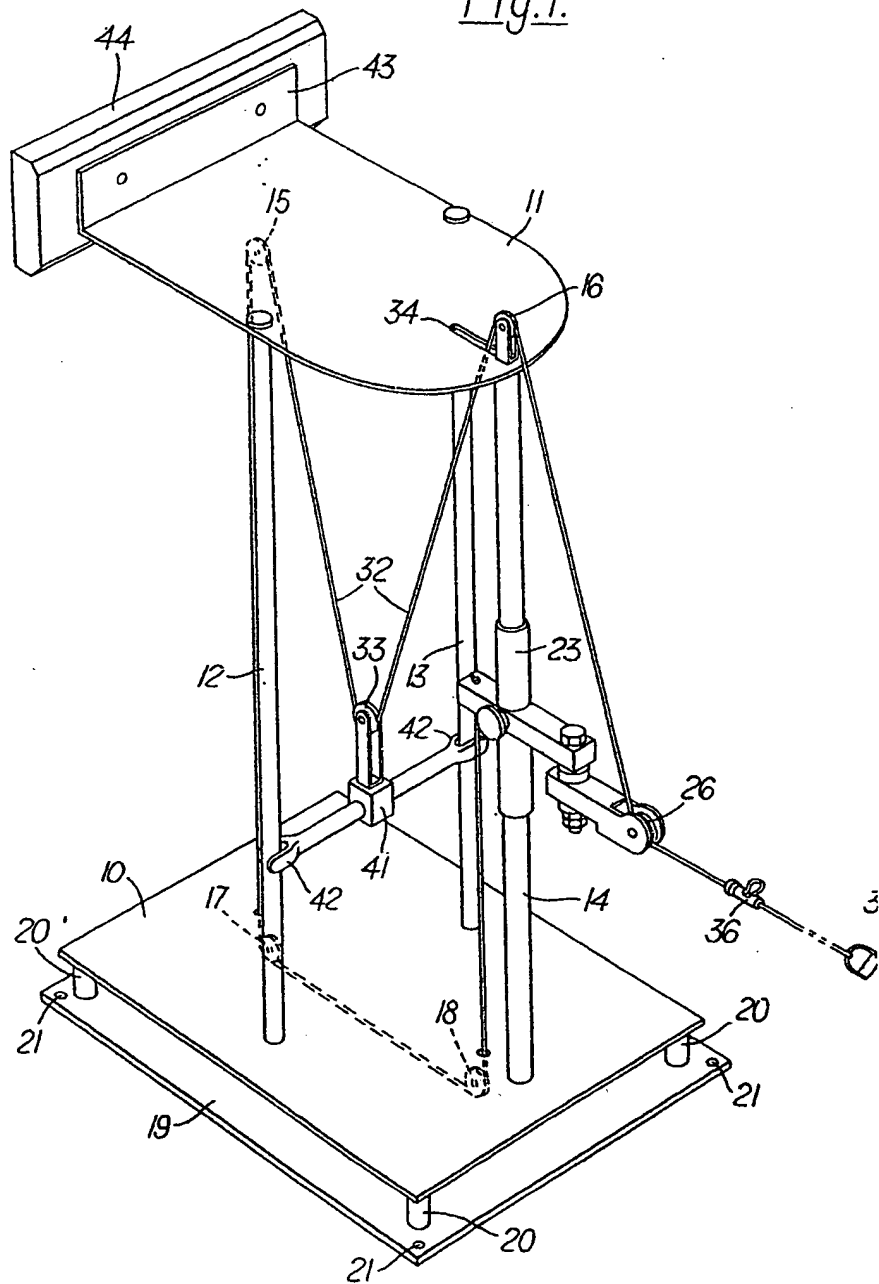
3. Exercising apparatus according to claim 1 or 2, in which said anchorage means

- includes a collar slidable on a vertical rod of said frame and provided with means for clamping same to said rod in any adjusted position.
- 5 4. Exercising apparatus according to any one of claims 1 to 3, in which said stop block is slidable along said rope and is lockable thereon in any adjusted position.
- 10 5. Exercising apparatus according to claim 3 or claims 3 and 4, in which said anchorage means includes a bracket secured to said collar and carrying for swivellable movement relative thereto a guide for the through-passing length of rope.
6. Exercising apparatus of the kind 15 stated substantially as hereinbefore described with reference to the accompanying drawings.

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Fig. 1.



4 SHEETS

## COMPLETE SPECIFICATION

This drawing is a reproduction of  
the Original on a reduced scale.  
SHEETS 1 & 2

Fig. 2.

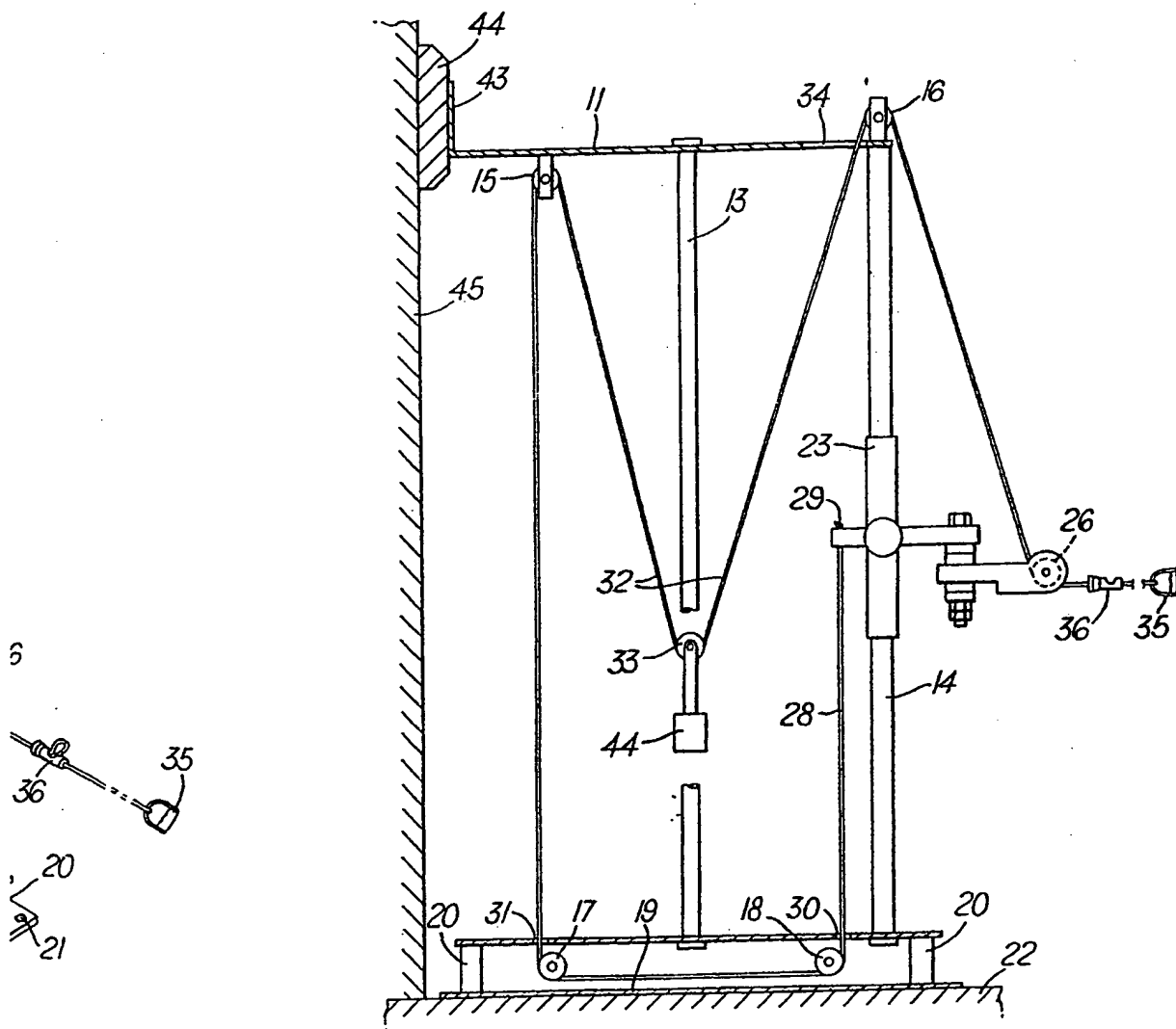
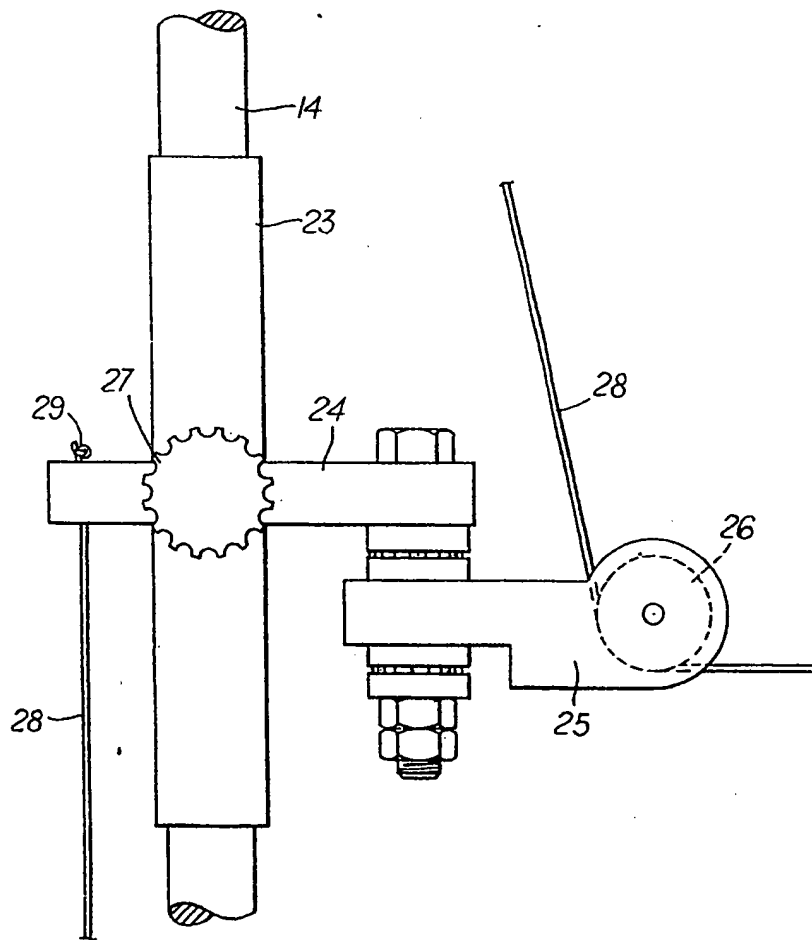
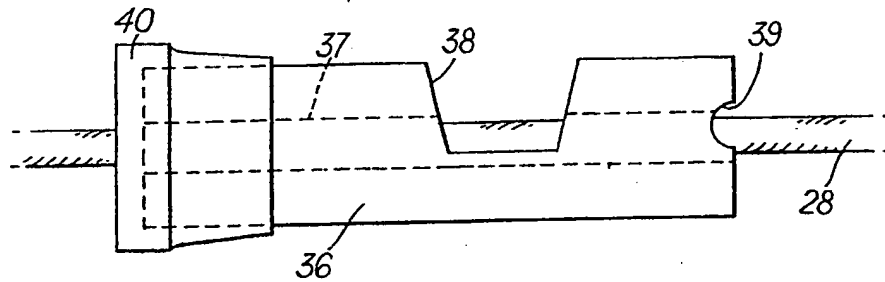


Fig. 3.

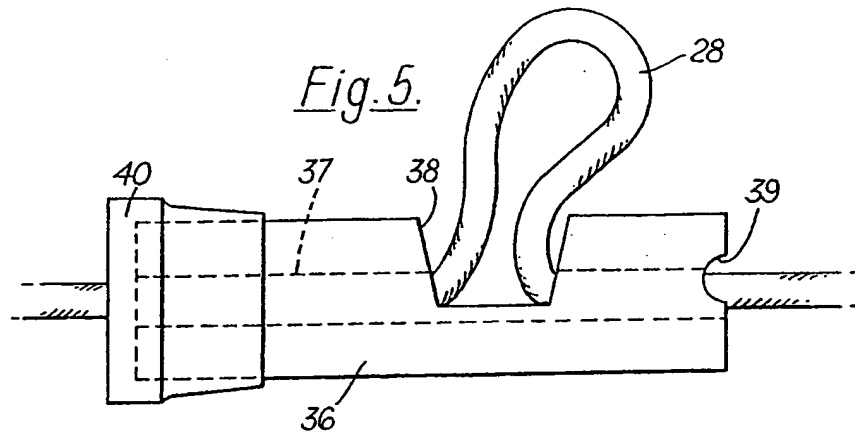


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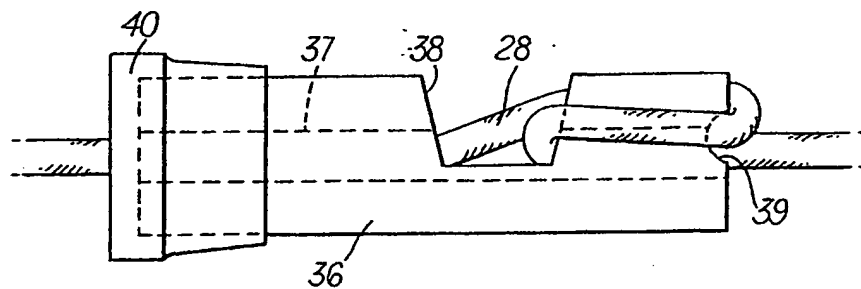
*Fig. 4.*



*Fig. 5.*



*Fig. 6.*



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